

GALAGO CRASSICAUDATUS E. GEOFFROY, 1812
(PRIMATES: GALAGIDAE):

PROPOSED USE OF THE PLENARY POWERS TO SUPPRESS
THE HOLOTYPE AND TO DESIGNATE A NEOTYPE.

Z.N.(S)2285

By T. Rowland Olson (*St. Thomas's Hospital Medical School,
London*)

ABSTRACT: In the course of a revisory study of the greater galagos (Olson, 1979), it became evident that a number of problems precluded the subspecific allocation of the type specimen of *Galago crassicaudatus* E. Geoffroy, 1812 which is now referred to the genus *Otolemur* Coquerel, 1859. The inadequacies of the holotype are deemed to constitute 'exceptional circumstances', which justify this application in order to resolve a complex zoological problem and to establish nomenclatural stability within the species group concerned. The object of this application is to ask the International Commission on Zoological Nomenclature to use its plenary powers to suppress the holotype of *Galago crassicaudatus* E. Geoffroy, 1812 in the Muséum National d'Histoire Naturelle in Paris, specimen number 1808-174 (Type collection number 146), and to designate as the neotype of this taxon specimen number 4.12.3.6, in the British Museum (Natural History), London.

HISTORY OF THE CASE

The first report on the future type specimen of *Galago crassicaudatus* occurs in the almost totally overlooked article by E. Geoffroy, 1811: 164-165, in which he misidentified it as an example of Bosman's potto (Bosman, 1704: 32). This account contains an observation which is relevant to one of the three essential characteristics given by E. Geoffroy, 1812: 166, in the original description of his type and only specimen as *Galago crassicaudatus*, namely that its pelage coloration is uniformly grey-red (gris-roux) on the exterior. This description reads: 'Pelage gris-roux: Oreilles deux tiers de la longueur de la tête: queue touffue.' The account presented by E. Geoffroy, 1820:12, of the holotype repeated this 1812 description without alteration or addition. In 1828: 34, he amended this description to read that the ears were a quarter shorter than the head. These four publications by E. Geoffroy (1811, 1812, 1820 and 1828) contain the only descriptions of *G. crassicaudatus* and its holotype by the original author.

2. Lesson, 1840: 245-246, cited Geoffroy, 1811: 165 as describing the specimen as being coloured a uniform red (rousse) externally. Not only is this a misquotation, but it is also inconsistent with Lesson's own description of the specimen. In the same article,

Lesson (1840:245) reported its colour as 'pelage gris-roux en-dessus, gris-blanc en-dessous'. This description agrees with those of E. Geoffroy and other previous authors that the colour of the specimen is greyish-red. This makes it difficult to understand why Lesson reported E. Geoffroy, 1811, in describing its colour as uniformly red.

3. Another description of the holotype's colour is given by Temminck, in van der Hoeven, 1844:42. Temminck stated that the base of each hair on the body was of a blackish brown colour and the tip was grey or fawn. These last two colours were described as being widely distributed over all superior parts of the body except where it was shaded with blackish brown.

4. Dahlbom, 1856: 227, 229, gave a brief but important account of the holotype in which he described it as being greyish-yellow (*griseotestaceum*) in colour. He also noted that the ears were transparent in appearance.

5. Elliot, 1913, also personally examined the holotype as part of his review of the primates and he gave the following account of the specimen (1913:56):

'Geoffroy's type is in the Paris Museum, but is so faded that but little of the original colour remains. The tail has lost most of the hair on the apical half, and the example is in such a condition that a description of it would only serve to mislead.'

6. These observations by Elliot were confirmed in 1977 when the present author examined the holotype in Paris. The holotype consists of a mounted skin in an extremely poor state of preservation and most of an incomplete skull. The mounted specimen is very faded and its tail is missing an indeterminable amount from its distal end due to post-mortem breakage. The tips of both ears are also damaged.

7. The poor preservation of the pelage of the holotype, reported as long ago as 1913 by Elliot, is also evident in many of the more ancient type specimens in the Paris collection. The unsatisfactory state of these specimens can be attributed to their having been exhibited for a prolonged period of time in a gallery where they were exposed directly to sunlight. It has not been possible to determine when this deterioration was first noticeable in the holotype of *Galago crassicaudatus*. In the last two descriptions of the holotype prior to Elliot, 1913, Temminck, in van der Hoeven, 1844:42, and Dahlbom, 1856:227, made no reference to a fading of the specimen's coloration. However, from their distinctly differ-

ent descriptions and the particular colour reported by Dahlbom, it is reasonable to assume that the specimen was already considerably faded and its tail damaged by the early 1850's. The conclusion is supported by Dahlbom's reference to the ears as being transparent. The ears of the holotype are in fact devoid of pigment and they do appear transparent. This condition is unknown in living adult individuals of *Otolemur* and its presence in the type is consistent with the interpretation that the original colour of the holotype has been extremely bleached by sunlight.

PROVENANCE OF '*GALAGO CRASSICAUDATUS*' SENSU STRICTO

8. In his first account, E. Geoffroy, 1811:165, explained that he obtained his supposed 'potto' specimen from the collections of the Lisbon Museum but he cited no location of origin for the specimen. In the original and subsequent descriptions of this same specimen as *Galago crassicaudatus* (1812:166), (1820:36, 1828:34), he left the habitat of this animal blank.

9. The first authoritative identification of another specimen to this taxon, accompanied by a statement of locality, was made by Sundevall in a letter to van der Hoeven, in van der Hoeven, 1844:42 on 20 February 1844. In his letter, Sundevall reported that he had received a specimen of this animal from near Port Natal in Caffraria.

10. Van der Hoeven, 1844: 42, also quoted a communication from Temminck stating that the native land of this animal was unknown but that it was probably an inhabitant of Africa.

11. Peters, 1852: 292, claimed that the specimen described by E. Geoffroy in 1812 was very similar to those he collected near Quélimane and Tette and that it almost certainly also originated from Mozambique.

12. The most widely accepted interpretation of this issue was first proposed by Thomas, 1917: 48, in his geographical review of the races of '*Galago crassicaudatus*'. He said: 'The type locality of *crassicaudatus* itself, not known at the time of description, has first to be settled, and on this I should accept the first authoritative identification of specimens and statement of locality, which were made by Peters in 1852. He says that Geoffroy's type-specimen "stammt ohne Zweifel ebenfalls aus Mossambique her", and identifies with it his own specimens of various places, of which Quélimane is the first to be mentioned. I should therefore take that as the type locality.'

In preferring Peters, 1852, Thomas overlooked Sundevall's reference, in van der Hoeven, 1844, to Port Natal in Caffraria as the location near which his specimen of this taxon was collected. Sundevall's contribution (contra Thomas, 1917) is the first association of a locality with a specimen of this taxon other than the holotype. While Sundevall's account is less extensive than Peters's, it cannot be considered as less authoritative. In fact, prior to his letter to van der Hoeven, Sundevall had actually examined Geoffroy's type in Paris as part of a revisory work which included this group whereas there is no evidence that Peters examined the holotype prior to his association of it with his specimens from Mozambique. Thus there seems to be little justification for Thomas's 1917 selection of Peters, 1852, as the first authority on this subject.

DISCUSSION

13. The analysis of the available quantitative data from the cranium of the holotype clearly establishes its identity within the greater galago dichotomy initially described by Matschie, 1905: 13, and reiterated by most twentieth century reviewers of this group: Lönnberg, 1913: 43; Thomas, 1917: 47; Schwarz, 1931: 44; Hill, 1953: 217. The morphometric analysis of the cranium plus the descriptive indication of the original size of the holotype's ears by E. Geoffroy, 1812 and 1828, demonstrate that it is not a representative of the small East African coastal species of *Otolemur* (= *O. garnettii*) as claimed by J. Buettner-Janusch and V. Buettner-Janusch, 1963: 1012, without corroborative evidence. The results of this analysis agree rather with those of Matschie, 1905, Lönnberg, 1913, Thomas, 1917, Schwarz, 1931 and Hill, 1953, in identifying the holotype as a form of the larger southern African species which therefore takes the specific name *crassicaudatus*. While it is possible to establish the specific biological identity of the holotype, its subspecific identity is indeterminable because of the lack of diagnostic data about its pelage coloration and of geographical information about its provenance.

14. The subspecific classification adopted in the author's present revisory study of *Otolemur crassicaudatus* is based upon the different pelage colorations within this species. The subspecific identity of *crassicaudatus* remains uncertain because of the deteriorated condition of the holotype and the ambiguity in the descriptions of its dorsal pelage coloration by E. Geoffroy, 1811, Lesson, 1840, Temminck, in van der Hoeven, 1844, Dahlbom, 1856, which makes it impossible to determine its original condition.

Accepting E. Geoffroy's 1811 description of this specimen as uniformly greyish-red does not resolve this ambiguity, because, of the two southern African subspecies of the *crassicaudatus* group, one is basically grey in colour with a brownish wash to the dorsum in many individuals, while the other is basically reddish-brown with some grey in many individuals. E. Geoffroy's descriptions of the holotype have been taken by most recent authorities: Sclater, 1900: 19; Matschie, 1905: 241; Lönnberg, 1913: 44; Thomas, 1917: 49; Fitzsimons, 1919: 79; Haagner, 1920: 17; Schwarz, 1931: 48; Shortridge, 1934: 14; Rode, 1937: 25; G. Allen, 1939: 115; Roberts, 1951: 17; Ellerman et al, 1953: 92; Hill, 1953: 222; Lawrence & Loveridge, 1953: 28; Astley-Maberly, 1959: 179; Sweeney, 1959: 15; Meester et al, 1964: 1; Meester & Setzer, 1971: 3; Boer, 1973: 158; Smithers & Tello, 1976: 76 to associate the holotype with the latter subspecific group. However, it is impossible to substantiate this determination due to the present condition of the holotype. Moreover, it is not universally accepted that this is the correct subspecific association for the holotype: a minority of authorities: Beddard, 1901: 271; Frade, 1924: 120; Swynnerton & Hayman, 1951: 297; Kingdon, 1971: 291 have associated the type specimen with the former subspecific group without presenting evidence in support of their decision.

15. The uncertainty of the type specimen's morphological affinity to one or other of these two subspecific groups is compounded by the absence of provenance data for the specimen. The widely accepted designation of Quélimane as the substitute type locality by Thomas in 1917 was based upon the erroneous opinion that Peters, 1852, was the first reviewer of this subject. Furthermore, it undermines the availability of the name '*Galago crassicaudatus*'. Quélimane is located within a recognisable zone of hybridization between the two southern African subspecies of *Otolemur crassicaudatus* which extends from eastern Zimbabwe-Rhodesia through the Zambezi River region of Mozambique to southern Malawi. While E. Geoffroy's description could in fact be interpreted as describing an intermediate condition between the two distinct subspecific morphologies to the north and to the south of this zone, this conclusion is both impossible to confirm and unnecessarily disruptive to the nomenclature of this species group, since the name given to such a hybrid cannot be used for either of the parental species under Article 24 c of the Code.

16. The uncertainty about the original coloration of the dorsal pelage of the type-specimen of *crassicaudatus* is of considerable systematic importance because this characteristic is the most diagnostic subspecific feature within the species of which this

specimen is the nominal type. The other features reported for this specimen by E. Geoffroy, 1811, 1812, 1820 & 1828, and other authorities or those features which are presently observable on the holotype are inadequate to establish its subspecific identity within its species. This absence of diagnostic subspecific characteristics in the holotype of *crassicaudatus* is due to the deteriorated condition of the specimen, the ambiguities involved in its previous descriptions and its lack of precise locality data.

17. The unfortunate circumstances surrounding the holotype of *crassicaudatus* reached a tragic climax in 1978 with the fire which totally destroyed the collections, library and records of the Museu Nacional de Historia Natural in Lisbon. This catastrophe eliminated the only remaining source of information which could have resolved some of the problems surrounding the specimen which was originally part of this collection.

18. All of these factors are deemed to constitute 'exceptional circumstances' which justify the designation of a neotype whose morphology is consistent with the most widely held interpretation about the subspecific identity of *crassicaudatus* and whose provenance is also in accord with the locality given by Sundevall, in van der Hoeven, 1844: 42, in the first authoritative identification of a specimen of known origin as a representative of this taxon. This request is considered necessary in order to resolve a complex zoological problem and to establish stability within the species-group typified by *crassicaudatus*.

19. Therefore, the International Commission on Zoological Nomenclature is requested:

- (1) to use its plenary powers to suppress all previous designations of type specimens for the nominal species *Galago crassicaudatus* E. Geoffroy, 1812, and to designate a neotype as follows: *Galago crassicaudatus* E. Geoffroy, 1812 (*Ann. Mus. Hist. nat. Paris* vol. 19:166); adult male skin and skull, British Museum (Natural History), London, number 4.12.3.6.
- (2) to place the specific name *crassicaudatus* Geoffroy, 1812, as published in the binomen *Galago crassicaudatus*, and as defined by the neotype designated under the plenary powers in (1) above, on the Official List of Specific Names in Zoology.

PROPOSED NEOTYPE

Galago crassicaudatus E. Geoffroy, 1812

Neotype: British Museum (Natural History), London, specimen number: 4.12.3.6.

The specimen consists of a stuffed male museum skin in excellent condition with a separate skull and mandible. The skull of the specimen indicates that the individual was a mature adult, and it is complete except for the crown of the left upper canine and the left mandibular corpus distal to the dental scraper. These two parts of the skull appear to have been destroyed at the time of collection. This specimen has been identified in previous publications under the following names:

Galago crassicaudatus; Thomas & Schwann, 1905: 256,
Elliot, 1913: 54

Galago crassicaudatus garnettii; Schwarz, 1931: 50

Otolemur crassicaudatus garnettii; Roberts, 1951: 18

Collector: The specimen was collected by C.H.B. Grant on 24th September in 1904 and bears his collector's number 881. It was presented to the B.M.(N.H.) in 1904 by C.D. Rudd.

Locality: The specimen was collected 15 km east of Eshowe in the Ngoye Forest, Natal Province, R.S.A. (28° 52' S, 31° 37' E.). This is less than 100 km north of Durban (formerly Port Natal) and it is considered to be consistent with the provenance of the first specimen from a known locality to be authoritatively identified as *Galago crassicaudatus* by Sundevall (in van der Hoeven, 1844: 42). Grant noted on the specimen's label that it was collected in thick forest at an altitude of 700 feet.

Description of specimen:

The overall colour given to the dorsal surface of the specimen by the cover hairs is a light brown with the midline of the body being slightly more reddish and considerably darker due to the presence of a concentration of long black guard hairs. The cover hairs on the top of the head are dark brown while those of the face and cheeks are a lighter brown. There are no orbital rings or inter-orbital strip on the face, but the hair on the muzzle is shorter than on the rest of the face. The sides of the body and the lateral surfaces of the limbs including the superior surfaces of the feet and hands are a uniform light brown to buff colour. The tail is a pale reddish-

buff colour with a dark chocolate brown tip on its distal 7 cm. The ventral surface of the body is yellowish-white in marked contrast to the darker coloured dorsal surface. The light colour of the venter also extends on to the medial surface of the limbs and over the throat region to the mouth. The hairs around the genitals are a rich yellow colour and there is an area of naked glandular skin 5.0 cm long and 2.1 cm wide covering the throat. All surfaces of the body and limbs are covered with a dense short coat of dark silvery grey woolly hairs which frequently show through the cover hairs to create a dark grey or blackish patch on the pelage. These are particularly evident on the venter where the cover hairs are much shorter. This dark woolly coat is not found on either the head or the tail. The naked area of the ears, rhinarium and plantar surfaces of the feet and hands are a dark blackish brown colour. The measurements recorded for the specimen by Grant at the time of collection are: Head + Body length 313 mm, Tail length 403 mm, Hindfoot length 88 mm, and Ear height 62 mm.

The skull of the specimen is dentally mature but neither of the basicranial sutures is fused. There is a small sagittal crest. The dentition of the upper and lower postcanine series exhibits only slight apical wear on the cusps of the teeth. The M_1 and M_2 are anomalous in lacking protocristids. Maximum cranial length: 7.25 cm, Bizygomatic breadth 4.86 cm, Palatal length: 2.79 cm, Palatal breadth across M^2 s: 2.38; length of upper postcanine series: 2.30.

The possibility of selecting the holotype of '*Galago zuluensis*' Elliot, 1907 as the neotype of '*Galago crassicaudatus*' was considered but this option was rejected for the following reasons. The condition of the holotype is not particularly good. Its stuffed skin was distorted during preservation, thus obscuring many important characteristics, and its skull has lost many of its teeth. In addition to its poor condition, the history of the holotype is not fully known. The holotype was originally part of the collections of the former Kristiania Museum in Oslo and it was obtained by the B.M.(N.H.) in 1894 as part of a specimen exchange before becoming a type. The only information available for the specimen is that it was collected by Dahl in Zululand, now Natal Province South Africa. Given the poor condition of the holotype and its limited associated data, there would have been little benefit in selecting it as the proposed neotype of *crassicaudatus*. The specimen which is proposed as the neotype of this taxon is exemplary and it is accompanied by considerably more information about its origin. In the present author's revisory study of *Otolemur*, '*Galago zuluensis*' is recognized as a subjective synonym of *Otolemur crassicaudatus crassicaudatus*.

REFERENCES

- ALLEN, G.M. 1939. *Bull. Mus. comp. Zool. Harvard* vol. 38: 1-763.
- ASTLEY-MABERLY, C.T. 1959. *Animals in Rhodesia*. 211 pp. Howard Timmins, Cape Town.
- BEDDARD, F.E. 1901. *Proc zool. Soc. London* vol. 1:271-276.
- BOER, L.E.R. DE 1973. *Genetica* vol. 44: 155-193.
- BOSMAN, W. 1704. *Nauwkeurige beschrijving van de Guinese Goud-Tard en Slave-Kust*. Deel 2. 280 pp. Anthony Schouten, Utrecht.
- BUETTNER-JANUSCH, J. & BUETTNER-JANUSCH, V. 1963. *Nature*, London vol. 197: 1018-1019.
- COQUEREL, C. 1859. *Revue Mag. Zool.* vol. 2: 457-460.
- DAHLBOM, A.G. 1856. *Zoologiska Studier*. Bardet 1. 240 pp. Berlingska Boktryckeriet, Lund.
- ELLERMAN, J.R., MORRISON-SCOTT, T.C.S. & HAYMAN, R.W. 1953. *Southern African Mammals*. 363 pp. British Museum (Natural History), London.
- ELLIOT, D.G. 1907. *Ann. Mag. nat. Hist.* (7), vol. 20: 185-196.
- _____. 1913. *Monogr. Am. Mus. nat. Hist.* No. 1 vol. 1, 317 pp.
- FITZSIMONS, F.W. 1919. *The Natural History of South Africa*. Vol. 1. 177 pp. Longmans, Green & Co.
- FRADE, F. 1924. *Bull. Soc. port. Sci. nat.* vol. 9: 127-135.
- GEOFFROY, E. 1811. *Annls. Mus. Hist. nat. Paris.* vol. 17: 164-165.
- _____. 1812. *Annls. Mus. Hist. nat. Paris.* vol. 19: 156-170.
- _____. 1820. Le Galago du Sénégal. in Geoffroy, E. & Cuvier, F., *Histoire naturelle des mammifères*. vol. 1: 1-12.
- _____. 1828. *Cours de l'Histoire naturel des mammifères*. 11^e leçon. 42 pp. 6 Juin 1828. Pichon et Didier, Paris.
- HAAGNER, A. 1920. *South African Mammals*. 248 pp. H.F. & G. Witherby, London.
- HILL, W.C.O. 1953. *Primates*. Vol. 1. 798 pp. Univ. Press, Edinburgh.
- JAMESON, H.L. 1909. *Ann. Mag. nat. Hist.* (8), vol. 4: 455-474.
- JENTINK, F.A. 1909. *Zool. J. Jena, Syst. Geogr. Biol.* vol. 28: 239-262.
- KINGDON, J. 1971. *East African Mammals*. Vol. 1. 446 pp. Academic Press, London.
- LAWRENCE, B. & LOVERIDGE, A. 1953. *Bull. Mus. comp. Zool. Harvard*, vol. 110: 1-80.
- LESSON, R.P. 1840. *Species des mammifères. Bimanes et quadrumanes*. 290 pp. J.B. Baillièrre, Paris.
- LÖNNBERG, E. 1913. *K. svenska Vetensk Akad. Handl.* vol. 48: 1-188.
- MATSCHIE, P. 1905. *Sber. Ges. naturf. Freunde Berl.* Jahrg. 1905 (10): 277-279.
- MEESTER, J., DAVIS, D.H.S. & COETZEE, C.G. 1964. *An interim classification of southern African mammals*. Zoological Society of Southern Africa and the Council for Scientific and Industrial Research. King William's Town. Cyclostyled in Pretoria.
- MEESTER, J. & SETZER, H.W. 1971. *The mammals of Africa: an identification manual*. Part 3(2). Smithsonian Inst. Press, Washington, D.C.

- OLSON, T.R. 1979. *Studies on aspects of the morphology and systematics of the genus Otolemur Coquerel, 1859 (Primates: Galagidae)*. Ph.D. Thesis, University of London. 804 pp. University Microfilms ref. no. 79-70, 038.
- PETERS, W.C.H. 1852. *Reise nach Mossambique. Mammals*. 202 pp. Georg Reimer, Berlin.
- ROBERTS, A. 1951. *The Mammals of South Africa*. 700 pp. Trustees of the Mammals of South Africa Book Fund, Pretoria.
- RODE, P. 1937. *Publs Com. Etud. hist. scient. Afr. occid, fr.* (B), No. 2: 1-220.
- SCHWARZ, E. 1931. *Ann. Mag. nat. Hist.* (10), vol. 5: 41-66.
- SCLATER, W.L. 1900. *The Fauna of South Africa*. Vol. 1. 324 pp. R.H. Porter, London.
- SHORTRIDGE, G.C. 1934. *The Mammals of South West Africa*. Vol. 1. 437 pp. Wm. Heinemann Ltd., London.
- SMITHERS, R.H.N. & TELLO, J.L.P.L. 1976. *Mus. Mem.* vol. 8: 1-184.
- SWEENEY, R.C.H. 1959. *A Checklist of the Mammals of Nyasaland*. 71 pp. The Nyasaland Society, Blantyre.
- SWYNNERTON, G.H. & HAYMAN, R.W. 1951. *J.E. Afr. nat. Hist. Soc. nat. Mus.* vol. 20: 274-392.
- THOMAS, O. 1917. *Ann. Mag. nat. Hist.* (8) vol. 20: 47-50.
- THOMAS, O. & SCHWANN, H. 1905. *Proc. zool. Soc. London* vol. 1 for 1905, Jan. - Apr.: 254-276.
- VAN DER HOEVEN, J. 1844. *Tijdschr. natuurl. gesch. physiol.* vol. 11: 1-48.